

REMARKS/DISCUSSION OF ISSUES

Claims 1-5, 7 and 9-16 are pending in the application.

Applicants thank the Examiner for acknowledging the claim for priority and receipt of certified copies of all the priority documents, and for indicating that the drawings are acceptable.

Reexamination and reconsideration are respectfully requested in view of the following Remarks.

35 U.S.C. § 103

The Office Action rejects: claims 1, 3-5, 12 and 13 and 16 under 35 U.S.C. § 103 over Wolf U.S. Patent Application Publication 2003/0087311 ("Wolf") in view of Potyrailo et al. U.S. Patent 6,538,725 ("Potyrailo"); claim 2 under 35 U.S.C. § 103 over Wolf in view of Potyrailo and further in view of Liang U.S. Patent Application Publication 2003/0096375 ("Liang"); claims 7, 9, 11 and 14 under 35 U.S.C. § 103 over Wolf in view of Potyrailo and further in view of Empedocles et al. U.S. Patent Application Publication 2004/0005723 ("Empedocles"); claim 10 under 35 U.S.C. § 103 over Wolf in view of Potyrailo and further in view of Lieber et al. U.S. Patent Application Publication 2002/0117659 ("Lieber"); and claim 15 under 35 U.S.C. § 103 over Wolf in view of Potyrailo, Empedocles and Lieber.

Applicants respectfully submit that all of the pending claims 1-5, 7 and 9-16 are patentable over the cited art for at least the following reasons.

At the outset, Applicants rely on at least on the following standards with regard to proper rejections under 35 U.S.C. § 103(a). First, a rejection on obviousness grounds under 35 U.S.C. § 103 cannot be sustained by mere conclusory statements: instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. In re Kahn, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also KSR International Co. v. Teleflex Inc., 550 U.S. ___, 82 USPQ2d 1385, 1396 (2007) (quoting Federal Circuit statement with approval). Second, there must be a reasonable expectation of success. "*The mere fact that references can be combined or modified does not render the resultant*

combination obvious unless the results would have been predictable to one of ordinary skill in the art." MPEP § 2143.01(III) (citing KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1396 (2007)). Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. *"All words in a claim must be considered in judging the patentability of that claim against the prior art."* MPEP § 2143.03 (citing In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)).

Claim 1

Among other things, in the device of claim 1 the surface of at least one nanowire is provided with at least one binding site able to selectively bind a molecule that, when bound to the binding site, quenches the luminescence of the nanowire, and a photodetector is provided for detecting the luminescence of the nanowire and for outputting a signal in response to the luminescence of the nanowire that indicates whether the molecule is bound to the binding site and is quenching the luminescence of the nanowire.

Applicants respectfully submit that no combination of the cited references discloses or suggests a device including this combination of features and which operates based on a molecule quenching the luminescence of a nanowire.

Indeed, Applicants respectfully submit that none of the prior references discloses or suggests determining whether or not a luminescence of a nanowire is quenched in order to determine whether or not a molecule is bound to the binding site on the nanowire.

The Office Action fairly admits that Wolf does not disclose any nanowires at all. However, the Office Action states that Potyrailo discloses a luminescent nanowire *"used as a luminescent label"* and that it would have been obvious to have "substituted" the nanowire for Wolf's fluorescein label *"as a mere alternative or functionally equivalent labeling technique."*

Applicants respectfully disagree and respectfully traverse the proposed combination of Wolf and Potyrailo as not being based on any reasoning that was taught or suggested in the prior art at the time of Applicants' invention. In particular,

Applicants respectfully traverse the statement that Wolf and Potyrailo teach that the nanowire was known or recognized by one of ordinary skill in the art at the time of Applicants' invention as a "*mere alternative or functionally equivalent labeling technique*" for Wolf's fluorescein label for detecting binding of an analyte-ligand pair.

Potyrailo discloses that an insoluble dye or pigment may be mixed into a coating to facilitate detection of the structural characteristics of the coating. Potyrailo discloses a long list of various acceptable insoluble particles which may be employed, and includes a nanowire as one example of an acceptable insoluble luminescent particle.

Potyrailo's nanowire is not chemically bonded to an analyte, or used as a marker of any chemical bond. Potyrailo merely teaches using a nanowire as a simple dye, doped into a coating to facilitate detection of the structural characteristics of the coating via a spectral analysis.

So Applicants respectfully submit that Potyrailo does not disclose: (1) bonding any receptor molecule to a nanowire; (2) that a nanowire may be employed as a luminescent marker for identifying a chemical bond; or (3) that a nanowire may be employed as a luminescent marker for identifying a chemical bond by determining whether or not the nanowire's luminescence is extinguished by the presence of a bonded molecule.

In short – Applicants respectfully submit that Potyrailo does not teach that a nanowire is an "*alternative or functionally equivalent labeling technique*" with respect to Wolf's fluorescein label for detecting binding of an analyte-ligand pair.

Applicants also respectfully submit that the Office Action fails to establish the level of ordinary skill in the art of invention of claim 1. This is a fundamental requirement for maintaining a rejection under 35 U.S.C. § 103. See M.P.E.P. §§ 2141(II)(C) and 2141.03. Thus the Office Action fails to perform the analysis required by KSR International Co. v. Teleflex Inc., 550 U.S. 398, 82 USPQ2d 1385 (2007) ("KSR") for rejecting a claim under 35 U.S.C. § 103.

Accordingly, for at least these reasons, Applicants respectfully submit that claim 1 is patentable over the cited art, and respectfully request that the rejection of

claim 1 be withdrawn and that claim 1 receive an early allowance.

Claims 3-5, 12 and 13 and 16

Claims 3-5, 12 and 13 and 16 depend from claim 1 and are deemed patentable for at least the reasons set forth above with respect to claim 1, and Applicants respectfully request that the rejections of claims 3-5, 12 and 13 and 16 be withdrawn and that claims 3-5, 12 and 13 and 16 receive an early allowance.

Claims 2, 7, 9-11 and 14-15

Claims 2, 7, 9-11 and 14-15 depend from claim 1. Applicants respectfully submit that Liang, Empedocles, and Lieber do not remedy the shortcomings set forth above with respect to claim 1. Accordingly, claims 2, 7, 9-11 and 14-15 are deemed patentable for at least the reasons set forth above with respect to claim 1, and Applicants respectfully request that the rejections of claims 2, 7, 9-11 and 14-15 be withdrawn and that claims 2, 7, 9-11 and 14-15 receive an early allowance..

CONCLUSION

In view of the foregoing explanations, Applicants respectfully request that the Examiner reconsider and reexamine the present application, allow claims 1-5, 7 and 9-16 and pass the application to issue. In the event that there are any outstanding matters remaining in the present application, the Examiner is invited to contact Kenneth D. Springer (Reg. No. 39,843) at (571) 283.0720 to discuss these matters.

Respectfully submitted,

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